Engineering Evaluation / Cost Analysis Approval Memorandum
Upper Current and Big Spring Small Arms Firing Ranges
Ozark National Scenic Riverways, Missouri

To: Lead, Environmental Compliance and Cleanup Division

Through: Superintendent, OZAR

From: James Lange, Regional Environmental Coordinator, MWR
Stephen Mitchell, Project Manager

Subject: Engineering Evaluation/Cost Analysis (EE/CA) Approval Memorandum
Upper Current and Big Spring Small Arms Firing Ranges (SAFRs)
Ozark National Scenic Riverways (OZAR), Missouri

Date: February 17, 2023

I. Introduction

This Approval Memorandum recommends and, upon adoption of this recommendation by the Environmental Compliance and Cleanup Division (ECCD), documents a decision by the National Park Service (NPS) to conduct an Engineering Evaluation/Cost Analysis (EE/CA) to provide the basis for selecting a Non-Time-Critical Removal Action (NTCRA) for both the Upper Current and Big Spring Small Arms Firing Ranges ("SAFRs" or "the Site") located within the Ozark National Scenic Riverways, Missouri. This decision is in accordance with and pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §§ 9601 *et seq.* and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300.

This Approval Memorandum has been prepared pursuant to NPS authority under section 104(b) of CERCLA and section 300.415(b)(4) of the NCP. ECCD has determined, pursuant to this authority, that the release or threatened release of hazardous substances at the Site warrants additional investigation through the conduct of an EE/CA to further characterize the nature and extent of contamination and evaluate removal action alternatives to address threats to public health or welfare or the environment

II. Site Conditions and Background

This Section provides a description of the Site; the physical location and surrounding conditions present at the Site; a summary of the key findings of previous investigations conducted at the Site including the history of operations that caused or contributed to Site contamination; the contaminants of potential concern (COPCs) released at the Site; the environmental media and other resources that have been adversely impacted, or that may be adversely impacted by the migration of Site contaminants; and any actions taken to date to address the contamination.
The Upper Current SAFR is located on the eastern bank of the Current River in proximity to Welch Landing. The latitude and longitude is 37.39642 North, -91.57174 East. The Site is located approximately 0.7 miles east of the Current River, in the Fifth Principal Meridian, Township 31 North, Range 6 West, southwest quadrant of Section 11 at an elevation of approximately 1,120 feet above mean sea level (ft, amsl) in Shannon County, Missouri.

The Big Spring SAFR Site is located approximately 4 miles south of Van Buren, MO and along the Long Bay Hollow tributary of the Current River and 0.25 miles west of State Highway Z, latitude and longitude of 36.926367 North, -90.983967 East. This SAFR is located in the Fifth Principal Meridian, Township 26 North, Range 1 East, southwest quadrant of Section 8 at an elevation of approximately 800 ft, amsl in Carter County, Missouri.

Both the Upper Current and Big Spring SAFRs have been inactive since approximately 2013. Both SAFRs are currently closed to vehicle access with locked gates at each respective highway access road entrance.

The Upper Current SAFR dates to the 1970s for exclusive NPS use. This SAFR was used for practice, training, and qualification. A wide variety of small arms were fired. The target stands were located in front of a manmade earthen berm approximately 7- to 8- feet high that acted as an impact zone. Currently the Upper Current SAFR berm and surrounding areas are fairly overgrown with saplings, plants, and grasses.

The Big Spring SAFR dates to the 1950s as a public shooting range but was subjected to limited use. The Big Spring SAFR became more active in the 1970s after NPS acquisition, and was used by multiple agencies for practice, training, and qualification. A wide variety of small arms were fired. The former target stands were located in front of a natural hillside that acted as an impact zone. The Big Spring SAFR is considerably over-grown with understory plants and grasses.

The COPC for both Sites is lead in soil. Previous investigations of the two SAFRs include Site Inspections that were performed in 2006. The Upper Current SAFR consisted of spent lead bullets, bullet fragments, or lead shot observed in 9 of the 24 samples collected. The Big Spring SAFR consisted of spent lead bullets, bullet fragments, or lead shot observed in 8 of the 23 samples collected. Additional sampling and analysis for both SAFRs was performed in April 2021 and included collection of soil samples to establish background concentrations of lead, as well as lead concentrations in soil from the shooting range floor, central impact areas, and overshot areas. The results of previous investigations are summarized below.

2006 Site Inspections (SIs)

The SI for the Upper Current SAFR included collection of 23 soil samples analyzed for total lead from a background soil area, the impact berm, the fallout or overshot area, and the range floor in front of the target stands. Lead concentrations ranged from 31.3 milligrams per kilogram (mg/kg) to 279 mg/kg from the background soil area, 70.8 mg/kg to 23,600 mg/kg from the impact berm, 23.3 mg/kg to 119 mg/kg from the fallout/overshot area, and 35.4 mg/kg to 279 mg/kg from the range floor.

The SI for the Big Spring SAFR included collection of 23 soil samples analyzed for total lead from a background soil area, the backstop/fallout area, and the range floor in front of the former target stands. Lead concentrations ranged from 11.0 mg/kg to 14.8 mg/kg from the background

soil area, 73.4 mg/kg to 7,360 mg/kg from the backstop/fallout area, and 24.2 mg/kg to 2,120 mg/kg from the range floor.

Additional characterization sampling was performed in April 2021 at both SAFRs as summarized below.

Upper Current SAFR

Lead concentrations in soil from the face of the impact berm ranged from 4,100 mg/kg to 16,000 mg/kg. Lead concentrations in soil from the impact berm as a whole ranged from 2,540 mg/kg to 3,310 mg/kg. The average concentration of lead in soil from the range floor was 120 mg/kg. Lead concentrations in soil from the fallout/overshot areas behind the berm ranged from 34.5 mg/kg to 53 mg/kg and are similar to background concentrations of lead in soil. Overall, lead concentrations from the impact berm exceeded the human health screening level of 800 mg/kg, and the ecological screening level of 0.94 mg/kg. In addition, the average lead concentration from the range floor exceeded the ecological screening level of 0.94 mg/kg.

Big Spring SAFR

Lead concentrations in soil from the central impact zone ranged from 3,960 mg/kg to 5,190 mg/kg. Lead concentrations from the overshot areas ranged from 148 mg/kg to 2,400 mg/kg. The average lead concentration from the range floor was 205 mg/kg. Overall, lead concentrations from the impact berm and specific overshot areas exceeded the human health screening level of 800 mg/kg, and the ecological screening level of 0.94 mg/kg. In addition, the average lead concentration from the range floor exceeded the ecological screening level of 0.94 mg/kg.

III. Threats to Public Health or Welfare or the Environment

Section 104 of CERCLA authorizes the President to take any response action consistent with the NCP which the President deems necessary to protect the public health or welfare or the environment from threats posed by the release or threatened release of hazardous substances into the environment. This response authority has been delegated to the Department of the Interior (DOI) and, with respect to any release on or from land under NPS jurisdiction, further delegated to NPS by DOI Departmental Manual Part 207 Chapter 7. The NPS Director has redelegated these authorities to ECCD within the Park Planning, Facilities and Lands Directorate.

Where NPS determines that the release or threatened release of hazardous substances poses a threat to public health or welfare or the environment, NPS may take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate such threats. When NPS determines that a planning period of at least six months is available before cleanup activities must be initiated, NPS is authorized to conduct an EE/CA to further characterize the nature and extent of contamination and evaluate removal action alternatives.

Section 300.415(b)(2) of the NCP establishes eight factors for determining the appropriateness of a removal action to address threats to public health or welfare or the environment:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;
(iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;
(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;
(vi) Threat of fire or explosion;
(vii) The availability of other appropriate federal or state response mechanisms to respond to the release; and
(viii) Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

Of these eight factors, three support the determination to conduct a removal action at this Site, as described below:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants

The previous investigations for both SAFRs found lead concentrations in soil in exceedance of human health and ecological screening criteria, posing a potential risk to human populations and the surrounding environment and satisfying this factor.

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems

Units of the National Park System are considered sensitive ecosystems. The actual and potential threats to park resources identified by the previous investigations satisfy this factor.

(iii) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate

Previous investigations of both SAFRs identified lead contamination exceeding human health and ecological screening levels in surface and shallow subsurface soil, satisfying criteria iv.

Based on these Site conditions, the Contaminated Site Team (CST) for the Site recommends that a removal action should be undertaken to address threats posed by the release or threatened release of hazardous substances. The CST has determined that a planning period of at least six months exists before cleanup activities need to be initiated. Based on these conclusions, the CST recommends that NPS conduct an EE/CA for the Site to further characterize the nature and extent of contamination and evaluate removal action alternatives.

IV. Scope of Recommended EE/CA

ECCD has issued guidance to CSTs that defines a "presumptive remedy" that establishes cleanup goals that, under most circumstances, should be achieved through the cleanup of NPS contaminated sites (ECCD Memorandum "Adoption of Presumptive Remedy for Contaminated Sites" (June 2021)). The cleanup goals established by the presumptive remedy guidance are to return a site to baseline conditions by (1) removing hazardous substances released into the environment at or from a site that are present at concentrations that exceed naturally-occurring background levels or ubiquitous anthropogenic concentrations (so-called "reference levels") and (2) recontouring and revegetating the site in conformance with all applicable NPS standards. At sites where the cleanup goals are to return the site to baseline conditions, the scope of the EE/CA is substantially narrowed by eliminating the need to perform risk assessments to establish cleanup goals. Instead, the scope of the EE/CA is focused on establishing background and reference levels and addressing any remaining data gaps related to the nature and extent of contamination at the site.

The presumptive remedy guidance recognizes that there may be circumstances at some sites that make it impracticable to achieve these cleanup goals. These circumstances include situations where returning the site to baseline conditions would: (1) be technically impracticable from an engineering perspective; (2) result in impacts to the park that are more adverse than those associated with leaving contaminants in place; (3) be cost prohibitive; or (4) be impracticable because of the complexity of the site or other site-specific circumstances that preclude restoring the site to baseline conditions.

None of these situations are presented by the Site. It is not impracticable, from a technical standpoint, to remove lead contamination that exceeds background levels at the Site. Achieving this cleanup goal will not result in impacts to the park that are more adverse than those associated with leaving contaminants in place nor is it cost-prohibitive. Site conditions are relatively straightforward and do not preclude returning the site to baseline conditions. Accordingly, the cleanup goals for the Site will be to remove lead contamination exceeding background levels for lead and recontouring and revegetating the site in conformance with all applicable NPS standards.

V. EE/CA Implementation

NPS has received funding to implement a Site EE/CA. Upon approval of this recommendation, the Site EE/CA will be completed.

The Site Investigations referenced in this Approval Memorandum and other documents considered or relied on in making this recommendation, are in the Site's Administrative Record file and information repository, which have been established for the two SAFRs and are available for public review at Park Headquarters upon request.

VI. Recommendation

For the reasons outlined in this Approval Memorandum, we recommend that ECCD issue this Approval Memorandum authorizing the implementation of an EE/CA at the Site.

VII. Approval

Based upon the information and analysis presented in this Approval Memorandum and the Administrative Record established for the Site, ECCD is issuing this Approval Memorandum in concurrence with the recommendations contained herein.

SHAWN MULLIGAN

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Lead, Environmental Compliance and Cleanup Division
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